Lab 2: Due March 22

Do this exercise in pairs, submit one assignment with both names for grading.

Submission is limited to one page.

Consider a cantilever beam as shown. All units are GPa, mm, KN. Model the beam using plane stress conditions.

Prepare figures showing the convergence of the maximum bending stress and maximum deflection with decreasing element size. Compare to the ‘exact’ solutions obtained using beam theory of $\Delta = 9\text{mm}$ and $\sigma_{\text{bending}} = 0.18\text{GPa}$. Use Poisson’s ratio $\nu = 0$. Develop one convergence curve for T6 elements and a separate one for T3 elements. Include also contour plots for one coarse and one fine mesh each for the T6 and T3 meshes. Comment briefly on results.

Your submission will be graded based on 8 points for the quality of the numerical results and 12 points for the quality of the graphical and text presentation.